A New Combination in *Mackaya* (Acanthaceae), with Lectotypification for Mackaya tapingensis

Deng Yunfei

Key Laboratory of Plant Resources Conservation and Sustainable Utilization, South China Botanical Garden, Chinese Academy of Sciences, Guangzhou, 510650, People's Republic of China; Key Laboratory of Biodiversity and Biogeography, Kunning Institute of Botany, Chinese Academy of Sciences, Kunning, 650204, People's Republic of China; and Graduate School of the Chinese Academy of Sciences, Beijing, 100039, People's Republic of China. yfdeng@scbg.ac.cn

Wu Zhengyi (Wu Chengyih)

Key Laboratory of Biodiversity and Biogeography, Kunning Institute of Botany, Chinese Academy of Sciences, Kunning, 650204, People's Republic of China

ABSTRACT. Comparative survey of morphological characters shows that *Eranthemum tapingense* W. W. Smith is better treated in Mackaya Harvey. Consequently, a new combination, M. tapingensis (W. W. Smith) Y. F. Deng & C. Y. Wu, is proposed, and its lectotype is designated. The species is distributed in China and Burma (Myanmar).

Key words: Acanthaceae, Eranthemum, Mackaya, Pseuderanthemum.

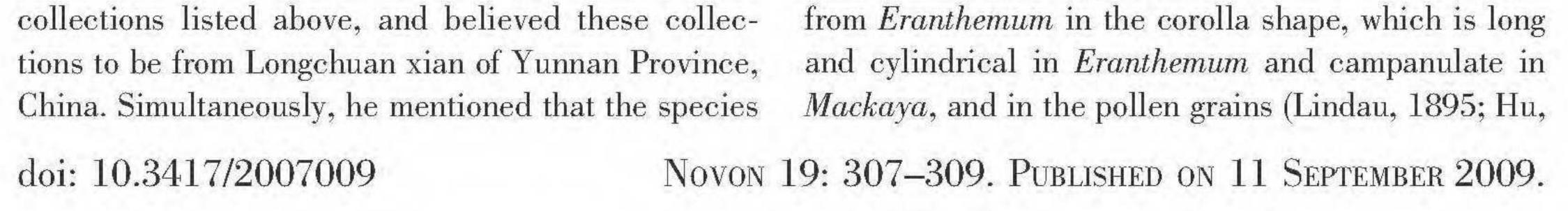
While revising the family Acanthaceae for the forthcoming volume 19 of Flora of China, the position of Pseuderanthemum tapingense (W. W. Smith) C. Y.

might belong in *Odontonemella* Lindau, but did not actually transfer the species from Eranthemum L. to Odontonemella. Hu (2002) included this species under *Pseuderanthemum* in her treatment of the family Acanthaceae for Flora Reipublicae Popularis Sinicae and indicated that it is distributed in the boundary areas between China and Burma (Myanmar).

Odontonemella was established by Lindau (1893), characterized by a ventricose corolla, two fertile stamens, two staminodes, and spangenpollen, and was typified by O. indica Lindau. Odontonemella indica was originally described in Eranthemum as E. indicum (Clarke, 1885) and was transferred to Mackaya by Ensermu et al. (1992). Lindau (1895) added a new member to the genus, O. leptostachya Lindau based on Leptostachya wallichii Nees, which is the lectotype of Leptostachya Nees (Hansen, 1985b; Deng & Xia, 2005) and does not fit the original description of Odontonemella given by Lindau (1895). Recent studies placed *Odontonemella* in synonymy with Mackaya (Brummitt, 1992; Ensermu et al., 1992; Mabberley, 1997; Scotland & Volessen, 2000). In October 2004, the first author had the opportunity to check the material identified as Pseuderanthemum tapingense when he visited the herbaria of Kew and Edinburgh. In the Edinburgh herbarium, the first author saw all three collections cited by Smith, of which G. Forrest 9655 was dissected by Smith. This collection clearly shows that the species has two fertile stamens and two staminodes. It is not *Pseuderanthemum* because of its campanulate corolla without a long cylindrical tube. It also differs

Wu & H. S. Lo (Anonymous, 1975) was drawn to our attention because it differs from other members of *Pseuderanthemum* Radlkofer in its secund flowers in terminal racemes and its campanulate corolla without a long slender cylindrical tube. The species was originally described as *Eranthemum tapingense* W. W. Smith (Smith, 1918) from three collections from Burma (Myanmar), i.e., Forrest 9655, 9484, and 12149. In the original description, Smith (1918) indicated that this taxon was related to E. indicum (Nees) C. B. Clarke and E. lateriflorum C. B. Clarke. Eranthemum indicum, originally described in Thyrsacanthus Nees as T. indicus Nees, was transferred to Mackaya Harvey by Ensermu et al. (1992), and E. lateriflorum to Gymnostachyum Nees by Hansen (1985a). It is reasonable, then, to re-evaluate the position of E. tapingense.

Wu (1984) included *Eranthemum tapingense* in his Index Florae Yunnanensis, cited the three Forrest



2002). After comparison with related genera, we concluded that the species belongs in *Mackaya* rather than in *Pseuderanthemum* or *Eranthemum*. Our recent molecular data (unpublished) also indicate that *Mackaya* forms a sister group with *Asystasia* Blume and forms paraphyletic groups with *Pseuderanthemum*. A new combination, *M. tapingensis* (W. W. Smith) Y. F. Deng & C. Y. Wu, is therefore necessary.

The genus Mackaya (Harvey, 1859) is characterized by its secund flowers, campanulate corolla, two fertile stamens, and two staminodes. Kanjilal and Das (1939) incorrectly included Asystasia in Mackaya and transferred three Assam species of Asystasia to Mackaya, i.e., M. atroviridis (T. Anderson) Das, M. macrocarpa (Nees) Das, and M. neesiana (Wallich) Das. These three species are quite different from Mackaya in having four stamens and we prefer to place them in Asystasia rather than Mackaya. In recent studies, however, Mackaya has been treated separately from Asystasia (Ensermu et al., 1992; Mabberley, 1997; Scotland & Vollesen, 2000; Wood, 2001). It was placed in subtribe Asystasieae (Bentham, 1876; Clarke, 1885; Lindau, 1895), tribe Odontonemeae (Lindau, 1895), or subtribe Justiciinae (Scotland & Vollesen, 2000) together with Dicentranthera T. Anderson, Asystasiella Lindau, Glossochilus Nees, and Salpinctium T. J. Edwards. Mackaya is a small genus of three species with a disjunct range: M. bella Harvey is restricted to South Africa (Phillips, 1951), but *M. indica* (Nees) Ensermu occurs in India, Bhutan, Nepal, and Burma (Myanmar). Mackaya tapingensis, proposed herein, is found in southwestern Yunnan, China, and adjacent Burma (Myanmar). Pollen morphology is one of the important characters defining the generic boundary in the family Acanthaceae (Lindau, 1893, 1895; Bremekamp, 1944). Pollen of Mackaya tapingensis is oblatespheroidal, 3-colporate, and ellipsoidal with a perforate exine (polar axis [P] = 50.2 [46–53] µm; equatorial diameter [E] = $44.9 [42-48] \mu m$ (Fig. 1). It is quite different from pollen of Eranthemum species but is similar to that of *Pseuderanthemum* species and other Mackaya species (Raj, 1961; Daniel, 1993, 1998; Scotland & Vollesen, 2000; Hu et al., 2005a, b). It differs from pollen of the other two species of Mackaya only in size (Ensermu et al., 1992).

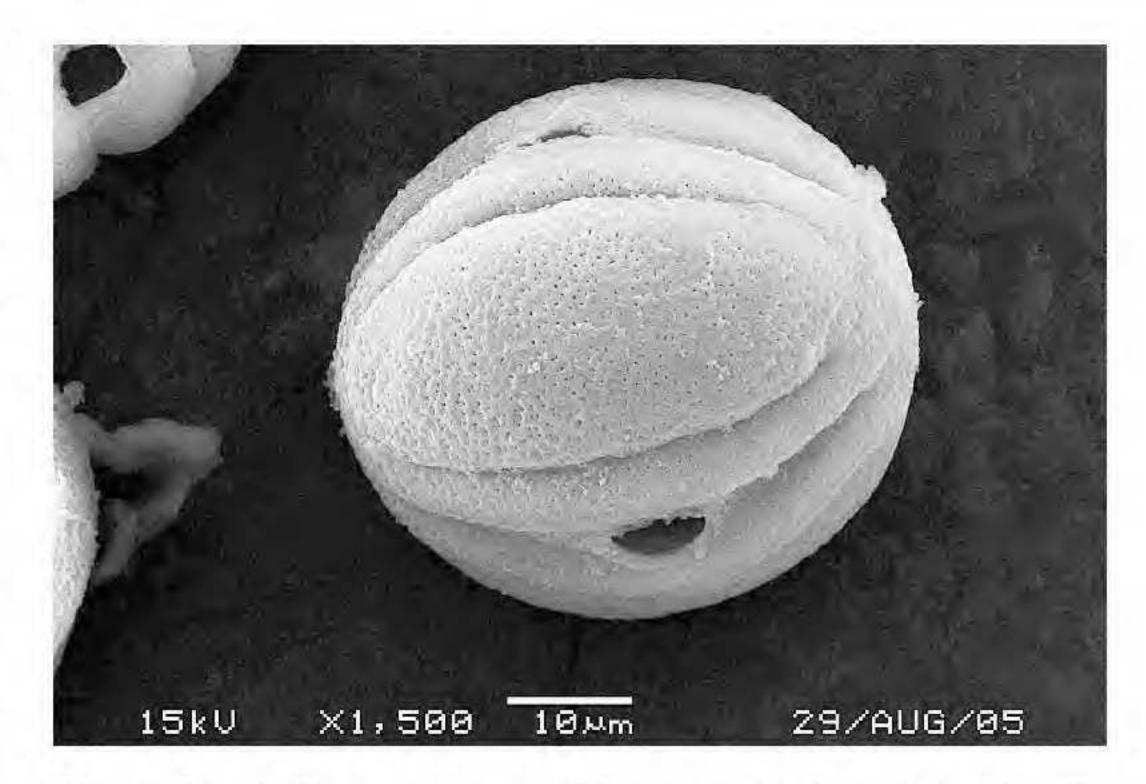


Figure 1. Pollen grain of Mackaya tapingensis (W. W.

Smith) Y. F. Deng & C. Y. Wu from G. Forrest 9655 (IBSC).

Fl. Hainan 4: 558. 1975. TYPE: Myanmar [Burma]: "Taping Valley, Upper Burma, lat. 24°20'N, 2000 ft., shrubby plant of 2–4 ft., flowers pale rose, in shady jungle," Feb. 1913, *G. Forrest 9655* (lectotype, designated here, E; duplicates, IBSC, K).

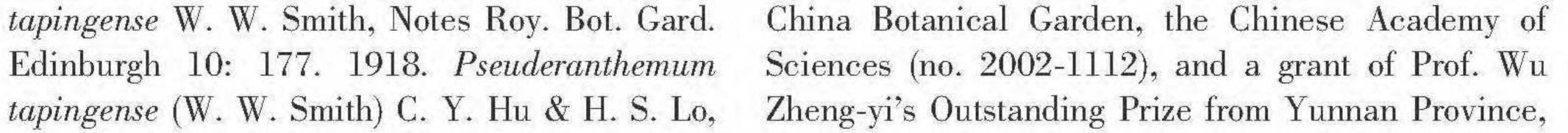
Distribution and habitat. The species is distributed in southwestern China (Yunnan) and Burma (Myanmar). It grows in shady habitat under forest at elevations of 600–1800 m.

Relationships. Mackaya tapingensis is similar to *M. indica*, but differs in its lanceolate (vs. elliptic) leaves and glabrous (vs. puberulent or glabrescent) calyx that is basally connate to 1/3–1/2 (vs. less than 1/5) (Smith, 1918; Hu, 2002).

Additional specimens examined. BURMA (MYANMAR).

Mackaya tapingensis (W. W. Smith) Y. F. Deng & C. Y. Wu, comb. nov. Basionym: *Eranthemum* Shan: Valley of the Taping, G. Forrest 9484 (E); Valley of the Taping, 2000 ft., G. Forrest 12149 (E). CHINA. Yunnan: Gengma Xian, 2250 m, 7 Jan. 2006, Deng Yunfei 18452 (IBSC); Lu-se (now Luxi Shi), 1750 m, 3 Mar. 1934, H. T. Tsai 56406 (IBSC, KUN); Lu-Hsi Hsien (now Luxi Shi), 1750 m, 9 Feb. 1934, H. T. Tsai 56868 (IBSC, KUN, SZ); Yingjiang Xian, 900 m, 26 Oct. 1986, Lin Qin 770760 (KUN); Yingjiang Xian, 1800 m, 19 Jan. 1989, Sun Hang 1530 (KUN); Yingjiang Xian, 1450 m, Dec. 1981, Tao Guoda 12791 (HITBC); Yingjiang Xian, 1500 m, 3 Nov. 1974, Tao Guoda 13128 (HITBC, KUN); Yingjiang to Ruili, autumn 1952, R. C. Ching 50112 (KUN, SWFC); Zhenkang Xian, 1130 m, 14 Feb. 1959, Zhu Taiping 641 (KUN); western Yunnan, autumn 1952, R. C. Ching 50633 (KUN, SWFC).

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China (2001). The first author thanks John Wood, Robert Scotland (FHO), and Kaj Vollesen (K) for their help during his visit to British herbaria and the curators of E, HITBC, IBSC, K, KUN, SWFC, and SZ for their help during his visits to their herbaria. We are grateful to Hao Zhenping (IBSC) for her assistance with the pollen studies.

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